MWD—QDT（150℃）Battery pack specification

1.Product type and model

1.1 Type

High temperature – Primary high temperature lithium - thionyl chloride battery pack

1.2 Model

MWD--QDT（150℃）28.8V battery pack

2.Battery pack characteristics

No.	Item	characteristics	Remarks
1	Model	MWD-QDT（150℃）	
2	Nominal voltage	28.8V	
3	Load voltage	≥27.5V	750mA
4	Standard discharge current	400mA	
5	Nominal capacity	28Ah	
6	Working temperature	-20℃-150℃	If the operating temperature is lower than -20 ° C or higher than 150 ° C, contact the manufacturer
7	Maximum external dimension /mm	φ37.5×1184	Wire leads are not included（Length 260mm）
8	Maximum continuous discharge current	800mA	（120℃-150℃）
9	Maximum pulse discharge current	1400mA	（120℃-150℃）
10	Weight	2.75kg	

11	Battery pack safety	Full diode fuse. Protection	Total Fuse：5A ; Single cell's fuse: 7A

3.Structure and appearance

3.1 Battery structure

Main materials of battery pack：ER321270S（150℃）lithium battery，Aluminum alloy tube or composite glass wire tube, Teflon plated silver wire, HL1910 circular special connector.

3.1.1 Single cell ER321270S（150℃）basic performance of lithium battery：

See the attachment

惠州市吉昂电池有限公司
Huizhou Markyn New Energy Co., LTD.

ER321270S-150

3.6V Li/$SOCl_2$ Battery

Size DD. Middle C-Rate Type hi-temperature ER battery

ADVATAGES:

- stable high operating voltage and high capacitance
- high energy density, high stable current
- wide operating temperature rages (-30℃~+150℃)
- low self-discharge rate (annual self-discharge rate is less than 3% at +25℃)
- excellent environmental application characteristics
- stainless steel case (low magnetic resistance to environmental erosion)

FEATURES:

- a positive structure with proprietary technology
- stainless steel - glass airtight package
- non-combustible electrolyte
- high short circuit safety
- comply with GB 8897.4-2008 technical requirements
- meet technical requirements of IEC60086.4:2014

SPECIFICATIONS

(Typical data from the batteries stored at 25±5℃ for 12 months)

Nominal Capacity: 28.0Ah

(At 50mA, +25℃ cut-off voltage 2.0V.)

Open Voltage (at +25℃) :	3.67V
Nominal Voltage (at +25℃, 0.3mA) :	3.60V
Max. Continuous Discharge Current	1800mA

(Obtained at +25℃~150℃, 50% nominal capacity, 2.0V cut-off voltage; For higher current, please consult GMB)

Pulse Current: 2000mA

(at +25 ° c, the un-discharged battery starts to discharge with a base current of 1mA, the reading is still above 3.0V.)

Storage (max.)	+30℃

(please consult GMB for higher storage temperature requirements or stringent conditions)

Working Temperate Range	-30℃-+150℃

(exceeding the operating temperature range can result in reduced capacity, low voltage reading and low initial pulse voltage reading.)

PHYCIAL PROPERTIES

Diameter（max.）	34.5mm
Height（Max.）	127.0mm
Typical Weight	208g
Lithium Metal Content	(About)3.5g

惠州市吉昂电池有限公司
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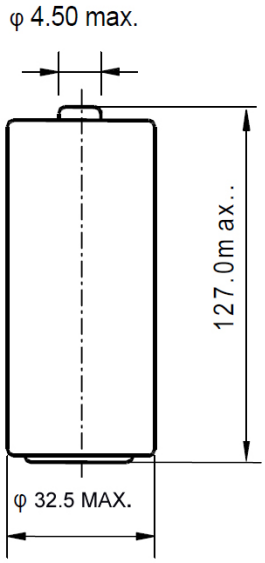
ER ER321270S-150

3.6V Li/$SOCl_2$ Battery

Size DD Middle C-Rate Type hi-temperature ER Battery



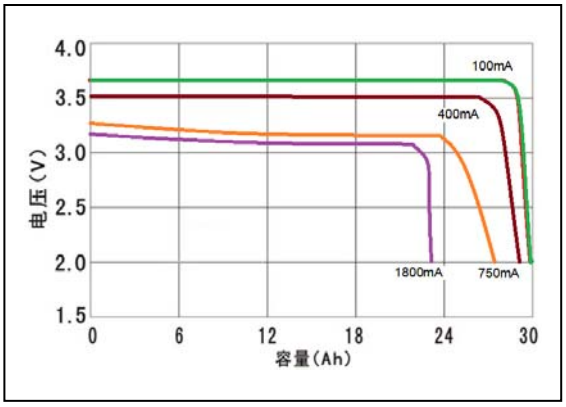
Size unit :mm (GB1804-m if tolerance is not specified)

For special connection requests, please consult GMB

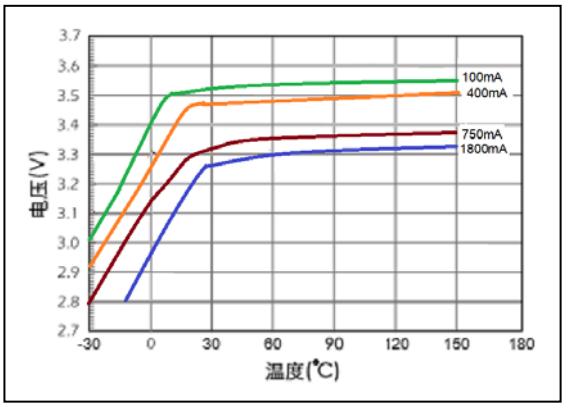
WARNING

- do not short out the battery
- do not charge the battery
- don't pin the batter
- do not squeeze the battery
- pay attention to the battery anode and cathode
- electrical equipment connection is correct
- do not disassemble the battery
- do not burn batteries
- do not mix old and new batteries
- do not heat the battery to more than 150℃
- do not directly weld the battery
- please use a battery with pre-welded pins or wires.

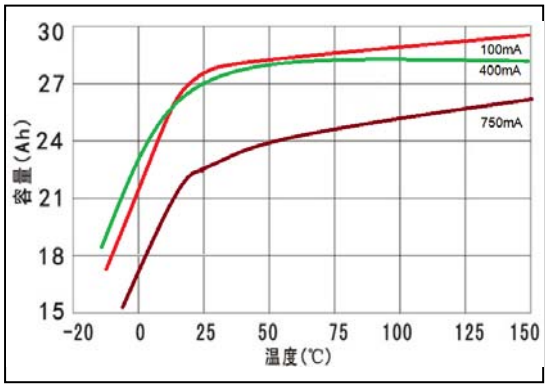
1. Voltage VS Capacity at +135℃ (intermediate value)



2. Current VS Temperature



3. Capacity VS Temperature(cut off at 2.0V)



Note: Due to temperature limitations in the application of electrical circuit safety electronic devices, it is recommended to apply in an environment between 20 ℃ and 150 ℃. If there are specific applications beyond the scope, please consult GMB: info@gmbattery.com.

3.1.2 Capacitance discharge test

3.1.2.1 Rated capacity test

The battery was kept stable for 12 hours at 150℃, discharge with the standard discharge current of 200mA to the cut-off voltage of 2.0V, or the battery was continuously discharged with 17200mΩ load until the battery voltage reached the cut-off voltage of 2.0V.

3.1.2.2 Rapid discharge capacity test

Put the battery in a test environment of 150℃ for 12 hours, and discharge with 1200mA constant to the cut-off voltage of 2.0V, or load with 2900mΩ to discharge continuously until the battery voltage reaches the cut-off voltage of 2.0V.

3.1.2.3 Storage and capacity

After store at 60℃ for 28 days, the battery was placed in a dry place at 25±5℃ for 4 hours, and the discharge capacity was tested according to the 3.1.2.1 rated capacity test method

3.1.3 Anti-vibration performance

The battery is vibrated with simple harmonic vibration with an amplitude of 0.8mm (maximum double amplitude of 1.6mm). The initial vibration frequency is 15Hz-1000Hz-15Hz, the reciprocating time is 60m, the acceleration is 200m/s², and the vibration one cycle.

3.1.4 Quality consistency check

Quality consistency inspection is used to judge whether the battery can be qualified in the production process, to ensure the stability of product quality. For details, see GB/T8897.1 -- 2013 and GB8897.2 -- 2013

3.2 HL1910 circular special connector characteristics

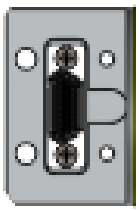
3.2.1 Working condition：

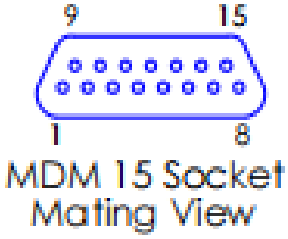
Working temperature	Working pressure	Relative humidity	Vibration	Shock
-40℃-125℃	0.1Mpa-80Mpa	40℃±2℃ reach to 90-95％	10-1000Hz Acceleration 196m/s²	480m/s²
Short time 150℃	Short time 100Mpa			

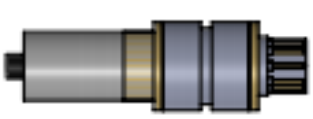
3.2.2 Main Technology Parameters

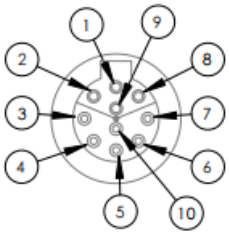
Operation current	Contact resistance	Insulation resistance	Dielectric Strength	Cycle life
5A	≤10mΩ	Normal atmospheric conditions ≥1000MΩ，high temperature environment ≥200MΩ，After moisture test≥10MΩ	250Vac after test voltage 500Vac	1000 times

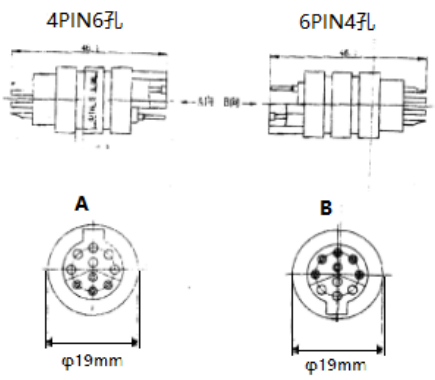
3.2.3 Structure drawing of HL1910 circular special connector



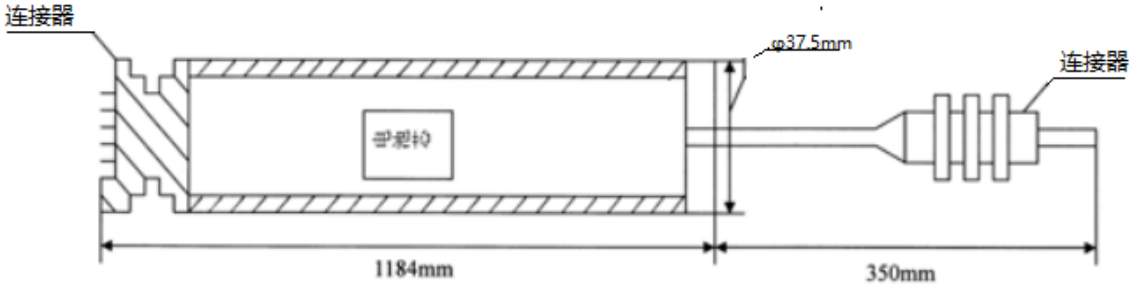




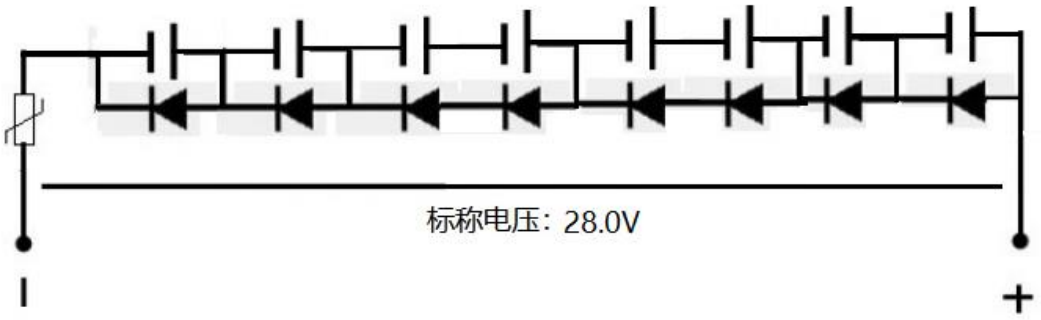




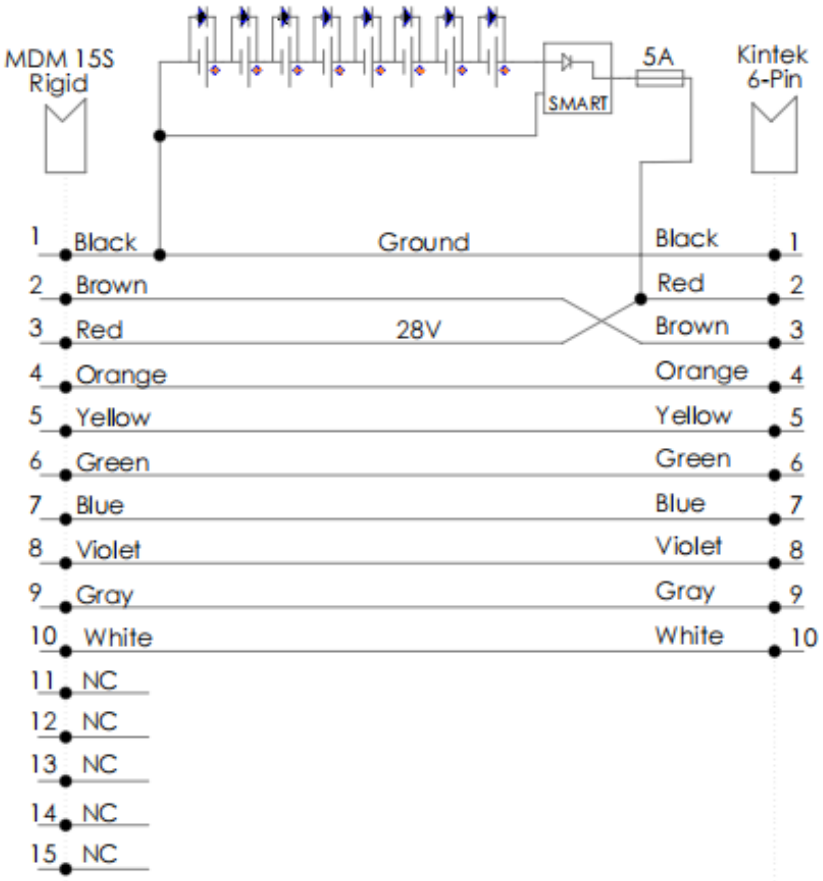
3.3 Basic dimensions and structure of battery packs



3.4 Battery pack basic electrical diagram



3.5 Battery connector communication connection diagram



4. Security feature

No.	Item	Criterions	Test method
1	Anti-vibration performance	No explosion, no fire, no leakage	
2	Leak-proof performance	No explosion, no fire, no leakage	
3	Insulation performance	No explosion, no fire, no leakage	
4	Continuity Test	Smooth communication	

5. Testing

5.1 Test conditions and instruments

5.1.1 Standard test environment: no special indication. The standard test conditions are:

Temperature: 120℃-150℃，Relative humidity: 40±5％，atmospheric pressure: 90±10Kpa

5.1.2 Test duration

The test shall be carried out within one month after delivery

5.1.3 Measuring instrument

（1）Voltage measurement with accuracy of not less than 0.5, accuracy of 0.01V and internal resistance of more than 10MΩ voltage measurement

（2）The battery pack's length is measured with a meter ruler with an accuracy not less than 1mm, and the diameter is measured with a vernier caliper with an accuracy not less than 0.02mm.

5.2 Test method

5.2.1 Open voltage

Store the battery pack sample in 5.1.1 standard environment. Then measure

the voltage between the positive and negative electrodes of the battery pack at the same temperature using the voltmeter specified in 5.1.3 (1). The voltage should be 28.5-29V. (Any short circuit will cause a drop in the open circuit voltage of the battery or cause the overall safety of the battery pack to break off, resulting in no voltage)

5.2.2 Load voltage

Place the battery pack in the 5.1.1 standard environment for 30min, discharge it with a 200mA load for 5min, and measure the voltage between the poles of the battery with the voltage specified in 5.1.3 (1). The voltage is not less than 20V.

Note: Do not load the new battery if you do not intend to use it immediately, as loading will cause the battery to discharge and thus reduce the battery life.

5.2.4 Leak-proof performance

The initial frequency of vibration is 10Hz-1000Hz-10Hz, the reciprocating time is 60min, the acceleration is 196m/s², and the vibration is one cycle.

5.2.5 Insulation performance

Use a multimeter to point the 20MΩ digits of battery pack connectors 1-10 and the outer wall of the battery pack. Place a black marker on pin 1 of the battery pack and a red marker on pin 2, 3, 4, 5, 6, 7, 8, 9, and 10 to the outer wall. And so on to the outer wall. ≥20MΩ between each needle and outer wall.

5.2.6 Continuity Test

1. Connect the component detector at both ends of the battery, and the switches are placed in the "disconnect" position;
2, put the multimeter on the ring ohm, measure the resistance between the "lower 1" and "upper 1" socket, read value should be less than 1 ohm, and can hear the buzzer;
3. Measure the resistance between "Up 2" and "down 2", and then the resistance between "Up 3" and "down 3", "up 4" and "down 4", "up 5" and "down 5", "up 6" and "down 6", "up 7" and "down 7", "up 8" and

"down 8" should be less than 1 ohms, which is the conduction state;

4. Note: Do not measure the resistance between 1 and 2 (there is battery voltage between them), otherwise it is potentially dangerous!

5.2.7 Overall dimensions

Under the test conditions of 5.1.1 standard test environment, the battery dimensions are tested using the test instrument in 5.1.3 (2)

6.Quality inspection

Quality inspection is used to determine whether the battery pack can be qualified in the production process to ensure the stability of product quality. You can refer to GB/T8897.1-2013,GB8897.2-2013 standards for execution.

7.Package labels

Based on the agreement between the supply and demand parties, packaging in accordance with the prescribed method. Packing list, inspection report shall be placed in the packing case. The battery pack shall be affixed with qualification certificate, warning, user record, and production date shall be marked on the tube of the battery pack.

8.Notice

MWD-QDT (150℃) battery packs are manufactured with a unique technology and have a certain degree of safety. However, as a lithium battery pack, it has a certain risk of electrical function or mechanical damage like other battery packs. During storage, transportation and use of the MWD-QDT (150 ° C) battery pack, the following requirements must be observed

8.1 Storage

Store the MWD-QDT (150℃) battery pack in a cool, clean and dry environment. The recommended temperature is 10℃ to 30℃, and the relative humidity is less than or equal to 50%. Avoid contact with corrosive substances, and keep away from fire and heat sources higher than 150℃. Battery storage should strictly comply with the following requirements:

●Do not expose batteries to temperatures higher than 150℃。

●Store the battery pack in its original packaging to eliminate any external short circuit that may occur

●Do not store battery packs in conductive anti-static bags or foam.

●Do not place battery packs on conductive metal surfaces

●Do not stack batteries together

8.2 Transportation

The battery is in a state of full charge when leaving the factory, packed in boxes for transportation process, should prevent violent vibration, impact and extrusion, prevent the sun and rain, should use cars, trains, ships, aircraft and other ordinary means of transport.

8.3 Safety use

Observe the following rules when using the MWD-QDT (150℃) battery pack to avoid improper operation. Causing the battery to inflate, produce leakage, serious rupture, and even explosion.

●Do not short circuit between the positive and negative electrodes of the battery pack, charge and reverse connection of the positive and negative electrodes；

●Do not over-discharge, squeeze, puncture, or burn the battery；

●Do not mix old and new battery packs with other types of battery packs；

●Do not use the battery outside the permitted temperature range；

●Read the instructions and warnings carefully before using the lithium battery pack, and perform operations strictly according to the regulations. Do not exceed the rated limit；

●Before assembling the instrument, check the appearance of the battery pack to ensure that no damage may affect the performance of the battery pack. Corroded wires and connectors should not have any hidden dangers that may cause short circuit or open circuit, such as corrosion, dirt or damage. Once found, stop using the battery pack and

notify professionals for treatment；

- The plug protection cap should be properly kept for temporary use when the battery pack is not used or used batteries are recycled for storage and transportation；
- The use of lithium battery packs should be recorded for continued use；
- During the assembly of the lithium battery pack, never short circuit the two ends of the battery pack. The short circuit of the outlet wires and the plug point of the battery pack may lead to the internal fuse. If the battery pack is subjected to strong impact, vibration, and exceeds the specified temperature range, there may be faults in the battery；
- The battery shall be promptly removed from the instrument and returned to the manufacturer for processing in batches when it reaches the terminal voltage.